CANADIAN GEOTECHNICAL JOURNAL, VOLUME 9, 1972 AUTHOR INDEX

Adams, J. I., and Klym, T. W. A study of anchorages for transmission tower foundations, 89-104.

Andrawes, K. Z. See El-Sohby, M. A.

Audy, R. See Tavenas, F. Bauer, G. E. See Scott, J. D.

Beaty, C. B. Geographical distribution of post-glacial slumping in southern Alberta, 219-224. Beredugo, Y. O., and Novak, M. Coupled horizontal and rocking vibration of embedded footings,

Bhaskaran, R. The microstructure of dispersed and flocculated samples of kaolinite, illite, and montmorillonite: Discussion, 233-234.

Bhaskaran, R. See Sankaran, K. S.

Bozozuk, M. Downdrag measurements on a 160-ft floating pipe test pile in marine clay, 127-136.

Bradstock, J. See Trow, W.

Brooker, E. W. See Hwang, C. T.

Brown, P. T., and Gibson, R. E. Surface settlement of a deep elastic stratum whose modulus increases linearly with depth, 467-476. Burn, K. N. See McRostie, G. C.

Campanella, R. G., and Vaid, Y. P. A simple Ko triaxial cell, 249-260.

Chan, H. T. See Kenney, T. C. Chan, H. T. Device for cutting varved soil samples, 498-501.

Clark, J. I., and Meyerhof, G. G. The behavior of piles driven in clay. I. An investigation of soil stress and pore water pressure as related to soil properties, 351-373.

DeLory, F. A., and Lai, W. H. Variation in undrained shearing strength by semiconfined tests: Reply, 519-520.

Eden, W. J. Some observations at Le Coteau landslide, Gatineau, Quebec, 508-514.

El-Sohby, M. A., and Andrawes, K. Z. Deformation characteristics of granular material under hydrostatic compression, 338-350.

Fellenius, B. H. Bending of piles determined by inclinometer measurements, 25-32. Fellenius, B. H. Down-drag on piles in clay due to negative skin friction, 323-337.

Flaate, K. Effects of pile driving in clays, 81-88.

Freeman, C. F., Klajnerman, D., and Prasad, G. D. Design of deep socketed caissons into shale rock, 105-114.

Freeman, C. F. See Prasad, G. D. Gibson, R. E. See Brown, P. T.

Guther, H. H. Bentonite seals for piezometers in frozen soils, 115-116.

Hollingshead, G. W., and Raymond, G. P. Field loading tests on muskeg, 278-289. Hwang, C. T., Murray, D. W., and Brooker, E. W. A thermal analysis for structures on permafrost,

Johnston, G. H., and Ladanyi, B. Field tests of grouted rod anchors in permafrost, 176–194.

Kenney, T. Cameron. See Palmer, J. H. LaVerne.

Kenney, T. C., and Chan, H. T. Use of radiographs in a geological and geotechnical investigation of varved soil, 195-205. Kenney, T. C. Stress-strain behaviour of soils: Book Review, 523-524.

Klajnerman, D. See Freeman, C. F. Klajnerman, D. See Prasad, G. D. Klym, T. W. See Adams, J. I.

Kwan, D. Observations of the failure of a vertical cut in clay at Welland, Ontario: Reply, 232-233

Lacroix, Y. See Marche, R.
Ladanyi, B. An engineering theory of creep in frozen soils, 63-80.
Ladanyi, B. See Johnston, G. H.
Ladanyi, B. In-situ determination of undrained stress-strain behavior of sensitive clays with the

pressuremeter, 313-319. Lai, W. H. See DeLory, F. A. La Rochelle, P. See Samson, L.

Ledoux, R. L'analyse minéralogique des sols argileux: Book Review, 125-126. Legget, R. F. Duisburg harbour lowered by controlled coal mining, 374–383

Liam Finn, W. D. Seismic design of nuclear power plants: Book Review, 521-523.

Lo, K. Y., and Morin, J. P. Strength anisotropy and time effects of two sensitive clays, 261-277.

Lo, K. Y. An approach to the problem of progressive failure, 407-429.

Loiselle, A., Massiera, M., and Sainani, U. R. A study of the cementation bonds of the sensitive clays

of the Outardes River Region: Reply, 516-519. Marche, R. et Lacroix, Y. Stabilité des culées de ponts établies sur des pieux traversant une couche

molle, 1-24.

Massiera, M. See Loiselle, A. McRostie, G. C., Burn, K. N., and Mitchell, R. J. The performance of tied-back sheet piling in clay.

Meyerhof, G. G. A study of anchorages for transmission tower foundations: Discussion, 321-322.

Meyerhof, G. G. See Clark, J. I.

Meyerhof, G. G., and Ranjan, G. The bearing capacity of rigid piles under inclined loads in sand. I. Vertical piles, 430-446.

Mitchell, R. J. See McRostie, G. C.

Morin, J. P. See Lo, K. Y. Murray, D. W. See Hwang, C. T Nixon, J. F. See Noonan, D. K. J

Noonan, D. K. J., and Nixon, J. F. The determination of Young's Modulus from the direct shear test, 504-507.

Novak, M. See Beredugo, Y. O. O'Brien, N. R. Microstructure of a laboratory sedimented flocculated illitic sediment, 120–122.

Ogunbadejo, T. A. See Quigley, R. M. Palmer, J. H. LaVerne, and Kenney, T. Cameron. Analytical study of a braced excavation in weak clay, 145-164. Penner, F. Observations of the failure of a vertical cut in clay at Welland, Ontario: Discussion,

123-124

Penner, F. Observations of the failure of a vertical cut in clay at Welland, Ontario: Note of Omission,

Piteau, D. R. Engineering geology aspects relating to preliminary damsite investigations on the Nelson River, Manitoba, 304-313.

Prasad, G. D. See Freeman, C. F.

Prasad, G. D., Freeman, C. F., and Klajnerman, D. Deep excavations for the Manufacturers Life

Centre Toronto, 137-144. Quigley, R. M., and Ogunbadejo, T. A. Clay layer fabric and oedometer consolidation of a soft

varved clay, 165-175.

Quigley, R. M. A study of the cementation bonds of the sensitive clays of the Outardes River Region:

Discussion, 226-229.

Ranjan, G. See Meyerhof, G. G. Rao, G. V. See Sridharan, A. Rao, D. V. The microstructure of dispersed and flocculated samples of kaolinite, illite, and montmorillonite: Discussion, 320-321.

Raymond, G. P. See Hollingshead, G. W. Sainani, U. R. See Loiselle, A.

Samson, L., and La Rochelle, P. Design and performance of an expressway constructed over peat by preloading, 447-466.

Sangrey, D. A. On the causes of natural cementation in sensitive soils, 117-119.

Sankaran, K. S., and Bhaskaran, R. Variation in undrained shearing strength by semiconfined tests: Discussion, 515-516. Scott, J. D., Wilson, N. E., and Bauer, G. E. Analysis and performance of a braced cut in sand with large deformations, 384-406.

Shields, D. H., and Tolunay, Z. A. Passive pressure coefficients for sand, 501-503.

Sridharan, A., and Rao, G. V. A study of the cementation bonds of the sensitive clays of the Outardes River Region: Discussion, 229-231.

Stermac, A. G. Terzaghi library memoirs No. 1: Book Review, 524.

Tavenas, F., and Audy, R. Limitations of the driving formulas for predicting the bearing capacity of piles in sand, 47-62.

Tolunay, Z. A. See Shields, D. H.

Trow, W., and Bradstock, J. Instrumeted foundations for two 43-storey buildings on till, Metropolitan Toronto, 290-303. Tschebetarieff, G. P. Stabilité des culées de ponts établies sur des pieux traversant une couche molle: Discussion, 225-226.

Vaid, Y. P. See Campanella, R. G. Wilson, N. E. See Scott, J. D.

SUBJECT INDEX¹

A. General

- Historical Aspects
 Terzaghi library memoirs No. 1.: Book Review, Stermac, A. G., 524.
- 04. Textbooks, Handbooks, and Geotechnical Periodicals
 L'analyse minéralogique des sols argileux. Ledoux, R. L., 125.
 Seismic design of nuclear power plants: Book Review. Liam Finn, W. D., 521.
 Terzaghi library memoirs No. 1.: Book Review. Stermac. A. G., 524.
- Societies and Meetings
 Stress-strain behaviour of soils: Book Review. Kenney, T. C., 523.

B. Engineering Geology

- General
 Engineering geology aspects relating to preliminary damsite investigations on the Nelson River, Manitoba, Piteau, D. R., 304.
- Soil Formation
 On the causes of natural cementation in sensitive soils. Sangrey, D. A., 117.
- Mass Movements and Subsidence
 Geographical distribution of post-glacial slumping in southern Alberta. Beaty, C. B., 219.

 Some observations at Le Coteau landslide, Gatineau, Quebec. Eden, W. J., 508.
- Mineralogy and Petrography
 A study of the cementation bonds of the sensitive clays of the Outardes River Region: Discussion. Sridharan, A., and Venkatappa Rao, G., 229.

C. Site Investigations

- General
 Engineering geology aspects relating to preliminary damsite investigations on the Nelson River, Manitoba. Piteau, D. R., 304.
- Measurement of Field Conditions
 Bentonite seals for piezometers in frozen soils. Guther, H. H., 115.

 Some observations at Le Coteau landslide, Gatineau, Quebec. Eden, W. J., 508.
- O8. Field Testing
 A study of anchorages for transmission tower foundations. Adams, J. I., and Klym, T. W., 89.
 Field tests of grouted rod anchors in permafrost. Johnston, G. H., and Ladanyi, B., 176. Field loading tests on muskeg. Hollingshead, G. W., and Raymond, C. P., 278. A study of anchorages for transmission tower foundations: Discussion. Meyerhof, G. G., 321. The behavior of piles driven in clay. I. An investigation of soil stress and pore water pressure as related to soil properties. Clark, J. I., and Meyerhof, G. G., 351.

D. Soil Properties: Laboratory and Field Determinations

- General
 Device for cutting varved soil samples. Chan, H. T., 498.
- Physico-chemical Properties
 A study of the cementation bonds of the sensitive clays of the Outardes River Region: Discussion. Quigley, R. M., 226.

¹Based on the International Geotechnical Classification System (IGC) approved in 1969 by the International Society for Soil Mechanics and Foundation Engineering. Permission to use this classification system is gratefully acknowledged.

A study of the cementation bonds of the sensitive clays of the Outardes River Region: Reply. Loiselle, A., Massiera, M., and Sainani, U. R., 516.

03. Composition, Structure, and Density

Microstructure of a laboratory sedimented flocculated illitic sediment. O'Brien, N. R., 120. Clay layer fabric and oedometer consolidation of a soft varved clay. Quigley, R. M., and Ogunbadejo, T. A., 165.

Use of radiographs in a geological and geotechnical investigation of varved soil. Kenney,

T. Cameron, and Chan, H. T., 195.

A study of the cementation bonds of the sensitive clays of the Outardes River Region. Discussion. Sridharan, A., and Rao, G. V., 229.

The microstructure of dispersed and flocculated samples of kaolinite, illite, and montmoril-

Ionite: Discussion. Bhaskaran, R., 233.

The microstructure of dispersed and flocculated samples of kaolinite, illite, and montmorillonite: Discussion, Rao, D. V., 320.

05. Compressibility

Clay layer fabric and oedometer consolidation of a soft varved clay. Quigley, R. M., and Ogunbadejo, T. A., 165.

A study of the cementation bonds of the sensitive clays of the Outardes River Region: Discus-

sion. Quigley, R. M., 226. A simple K₀ triaxial cell. Campanella, R. G., and Vaid, Y. P., 249. A study of the cementation bonds of the sensitive clays of the Outardes River Region: Reply. Loiselle, A., Massiera, M., and Sainani, U. R., 516.

06. Shear-deformation and Strength Properties

An engineering theory of creep in frozen soils, Ladanyi, B., 63.

A study of the cementation bonds of the sensitive clays of the Outardes River Region: Dis-

cussion. Quigley, R. M., 226.
A simple Ko triaxial cell. Campanella, R. G., and Vaid, Y. P., 249.

Strength anisotropy and time effects of two sensitive clays. Lo, K. Y., and Morin, J. P.,

In-situ determination of undrained stress-strain behavior of sensitive clays with the pressuremeter. Ladanyi, B., 313.

Deformation characteristics of granular material under hydrostatic compression. El-Sohby, M. A., and Andrawes, K. Z., 338.

An approach to the problem of progressive failure. Lo, K. Y., 407.

The determination of Young's Modulus from the direct shear test. Noonan, D. K. J., and

Nixon, J. F., 504.

A study of the cementation bonds of the sensitive clays of the Outardes River Region: Reply. Loiselle, A., Massiera, M., and Sainani, U. R., 516.

Variation in undrained shearing strength by semiconfined tests: Discussion. Sankaran, K. S., and Bhaskaran, R., 515.

Variation in undrained shearing strength by semiconfined tests: Reply. DeLory, F. A., and

Lai, W. H., 519.

08. Thermal Properties

A thermal analysis for structures on permafrost. Hwang, C. T., Murray, D. W., and Brooker, E. W., 33.

An engineering theory of creep in frozen soils. Ladanyi, B., 63.

E. Analysis of Soil-Engineering Problems

01. In Situ Stresses caused by Gravity and Applied Loads and Excavations Surface settlement of a deep elastic stratum whose modulus increases linearly with depth. Brown, P. T., and Gibson, R. E., 467.

02. Deformation and Settlement Problems

Design and performance of an expressway constructed over peat by preloading. Samson, L., and La Rochelle, P., 447.
Surface settlement of a deep elastic stratum whose modulus increases linearly with depth.

Brown, P. T., and Gibson, R. E., 467.

04. Bearing Capacity of Piles

Limitations of the driving formulas for predicting the bearing capacity of piles in sand. Tavenas, F., and Audy, R., 47.

Effects of pile driving in clay. Flaate, K., 81.

Downdrag measurements on a 160-ft floating pipe test pile in marine clay. Bozozuk, M., 127.

Down-drag on piles in clay due to negative skin friction. Fellenius, B. H., 323.

The behavior of piles driven in clay I. An investigation of soil stress and pore water pressure as related to soil properties. Clark, J. L., and Meyerhof, G. G., 351.

The bearing capacity of rigid piles under inclinded loads in sand. I. Vertical piles. Meyerhof,

G. G., and Ranjan, G., 430.

05. Earth Pressure Problems

Analytical study of a braced excavation in weak clay. Palmer, J. H. La Verne, and Kenney, T. Cameron, 145.

The performance of tied-back sheet piling in clay. McRostie, G. C., Burn, K. N., and Mitchell,

R. J., 206. Analysis and performance of a braced cut in sand with large deformations. Scott, J. D., Wilson, N. E., and Bauer, G. E., 384.

Passive pressure coefficients for sand. Shields, D. H., and Tolunay, Z. A., 501.

06. Stability of Slopes, Cuts and Excavations

An approach to the problem of progressive failure. Lo. K. Y., 407.

08. Dynamic Problems

Coupled horizontal and rocking vibration of embedded footings. Beredugo, Y. O., and Novak, M., 477.

09. Frost Action and Heat-Transfer Problems

A thermal analysis for structures on permafrost. Hwang, C. T., Murray, D. W., and Brooken, E. W., 33.

Field tests of grouted rod anchors in permafrost. Johnston, G. H., and Ladanyi, B., 176.

G. Analysis of Rock Engineering Problems

03. Bearing Capacity of Rocks

Design of deep socketed caissons into shale rock, Freeman, C. F., Klajerman, D., and Prasad, G. D., 105.

H. Design Construction and Behavior of Engineering Works

01. Foundations of Structures

Stabilité des culées de ponts établies sur des pieux traversant une couche molle. Marche, R et Lacroix, Y., 1.

Design of deep socketed caissons into shale rock. Freeman, C. F., Klajnerman, D., and Prasad, G. D., 105

Deep excavations for the Manufacturers Life Centre, Toronto, Prasad, G. D., Freeman, C. F., and Klajnerman, D., 137.

Stabilité des culées de ponts établies sur des pieux traversant une couche molle: Discussion. Tschebotarioff, G. P., 225.

A deep excavation and a raft foundation in soft clay. Insley, A. E., 237. Instrumented foundations for two 43-storey buildings on till, Metropolitan Toronto. Trow, W., and Bradstock, J., 290.

02. Retaining Structures and Cutoff Walls

Deep excavations for the Manufacturers Life Centre, Toronto. Prasad, G. D., Freeman, C. F., and Klajnerman, D., 137.

A deep excavation and a raft foundation in soft clay. Insley, A. E., 237.

Analysis and performance of a braced cut in sand with large deformations. Scott, J. D., Wilson, N. E., and Bauer, G. E., 384.

03. Unsupported Excavations

Observations of the failure of a vertical cut in clay at Welland, Ontario: Discussion. Penner, F., 123.

Observations of the failure of a vertical cut in clay at Welland, Ontario: Reply. Kwan, D., 232

04. Earthworks, Embankments, Fills, and Dams

Stabilité des culées de ponts établies sur des pieux traversant une couche molle. Marche, R. et Lacroix, Y. 1.

Stabilité des culées de ponts établies sur des pieux traversant une couche molle: Discussion. Tschebotarioff, G. P., 225.

Design and performance of an expressway constructed over peat by preloading. Samson, L., and La Rochelle, P., 447.

05. Underground Structures

Duisburg harbour lowered by controlled coal mining. Legget, R. F., 374.

Harbors, Canals, and Coastal Protective Works
 Duisburg harbour lowered by controlled coal mining. Legget, R. F., 374.

K. Construction Methods and Equipment Including Improvement of Soil and Rock Conditions

- 07. Piles and Pile Driving
 Bending of piles determined by inclinometer measurements. Fellenius, B. H., 25.
- 11. Anchorages, Tied-back Walls, Reinforcements, Linings, and Other Supports of Soil and Rock

The performance of tied-back sheet piling in clay. McRostie, G. C., Burn, K. N., and Mitchell, R. J., 206.

CANADIAN GEOTECHNICAL JOURNAL

REVUE CANADIENNE DE GÉOTECHNIQUE

EDITOR:

A. G. STERMAC

CONTENTS

Volume 9, 1972

Published by The National Research Council of Canada



CONTENTS

FEBRUARY	
ARTICLES: R. Marche et Y. Lacroix Stabilité des culées de ponts établies sur des pieux traversant une	
couche molle B. H. Fellenius Bending of piles determined by inclinometer measurements	25
C. T. Hwang, D. W. Murray, and E. W. Brooker A thermal analysis for structures on permafrost	33
F. Tavenas and R. Audy Limitations of the driving formulas for predicting the bearing capacity of piles in sand	47
B. Ladanyi An engineering theory of creep in frozen soils K. Flaate Effects of pile driving in clays	63 81
C. F. Freeman, D. Klajnerman, and G. D. Prasad Design of deep socketed caissons into shale rock	89
TECHNICAL NOTES:	
H. H. Guther Bentonite seals for piezometers in frozen soils	115
D. A. Sangrey On the causes of natural cementation in sensitive soils N. R. O'Brien Microstructure of a laboratory sedimented flocculated illitic sediment	117
•	120
DISCUSSION: F. Penner Observations of the failure of a vertical cut in clay at Welland, Ontario: Discussion	123
BOOK REVIEW: R. L. Ledoux L'analyse minéralogique des sols argileux	125
May	
ARTICLES: M. Bozozuk Downdrag measurements on a 160-ft floating pipe test pile in marine clay	127
G. D. Prasad, C. F. Freeman, and D. Klajnerman Deep excavations for the Manufacturers Life Centre. Toronto	137
J. H. LaVerne Palmer and T. Cameron Kenney Analytical study of a braced excavation in weak clay	145
R. M. Quigley and T. A. Ogunbadejo Clay layer fabric and oedometer consolidation of a soft varved clay	165
G. H. Johnston and B. Ladanyi Field tests of grouted rod anchors in permafrost T. Cameron Kenney and H. T. Chan Use of radiographs in a geological and geotechnical	176
investigation of varved soil	195
G. C. McRostie, K. N. Burn, and R. J. Mitchell The performance of tied-back sheet piling in clay	206
TECHNICAL NOTE: C. B. Beaty Geographical distribution of post-glacial slumping in southern Alberta	219
DISCUSSIONS: Gregory P. Tschebotarioff Stabilité des culées de ponts établies sur des pieux traversant	
une couche molle: Discussion R. M. Quigley A study of the cementation bonds of the sensitive clays of the Outardes	225
River region: Discussion A. Sridharan and G. Venkatappa Rao A study of the cementation bonds of the sensitive	220
clays of the Outardes River region: Discussion	229
D. Kwan Observations of the failure of a vertical cut in clay at Welland, Ontario: Reply	232
R. Bhaskaran The microstructure of dispersed and flocculated samples of kaolinite, illite, and montmorillonite: Discussion	233
NOTE OF OMISSION:	
F. Penner Observations of the failure of a vertical cut in clay at Welland, Ontario: Note of omission	235

Augue

ARTICLES:	
A. E. Insley A deep excavation and a raft foundation in soft clay R. G. Campanella and Y. P. Vaid A simple K ₀ triaxial cell K. Y. Lo and J. P. Morin Strength anisotropy and time effects of two sensitive clays G. W. Hollingshead and G. P. Raymond Field loading tests on muskeg W. Trow and J. Bradstock Instrumented foundations for two 43-storey buildings on till, Metropolitan Toronto	237 249 261 278
TECHNICAL NOTES D. R. Piteau Engineering geology aspects relating to preliminary damsite investigations	20.4
on the Nelson River, Manitoba B. Ladanyi In-situ determination of undrained stress-strain behavior of sensitive clays with the pressuremeter	304
DISCUSSIONS: D. V. Rao The microstructure of dispersed and flocculated samples of kaolinite, illite, and	
montmorillonite: Discussion G. G. Meyerhof A study of anchorages for transmission tower foundations: Discussion	320 321
November	
ARTICLES: B. H. Fellenius Down-drag on piles in clay due to negative skin friction	323
M. A. El-Sohby and K. Z. Andrawes Deformation characteristics of granular material under hydrostatic compression	338
J. I. Clark and G. G. Meyerhof The behavior of piles driven in clay. I. An investigation of soil stress and pore water pressure as related to soil properties	351
R. F. Legget Duisburg harbour lowered by controlled coal mining J. D. Scott, N. E. Wilson, and G. E. Bauer Analysis and performance of a braced cut in	374
sand with large deformations K. Y. Lo An approach to the problem of progressive failure	384 407
G. G. Meyerhof and G. Ranjan The bearing capacity of rigid piles under inclined loads in sand. I. Vertical piles	430
L. Samson and P. La Rochelle Design and performance of an expressway constructed	
over peat by preloading P. T. Brown and R. E. Gibson Surface settlement of a deep elastic stratum whose modulus	447
Y. O. Beredugo and M. Novak Coupled horizontal and rocking vibration of embedded	
footings	477
TECHNICAL NOTES: H. T. Chan Device for cutting varved soil samples	498
D. H. Shields and Z. A. Tolunay Passive pressure coefficients for sand D. K. J. Noonan and J. F. Nixon The determination of Young's Modulus from the direct	501
shear test W. J. Eden Some observations at Le Coteau landslide, Gatineau, Quebec	504 508
DISCUSSIONS:	
K. S. Sankaran and R. Bhaskaran Variation in undrained shearing strength by semiconfined tests: Discussion	515
A. Loiselle, M. Massiera, and U. R. Sainani A study of the cementation bonds of the sensi-	516
tive clays of the Outardes River Region: Reply F. A. DeLory and W. H. Lai Variation in undrained shearing strength by semiconfined	
tests: Reply	519
BOOK REVIEWS: W. D. Liam Finn Seismic design of nuclear power plants	521
T. C. Kenney Stress - strain behaviour of soils	523 524

